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THIS MONTH:

- The Limits Of Computer Intelligence-Dr. L. Dreger
- Meeting Notes
- Presidents Program
- Other Computers
- And Other Great Things

If any articles are copied
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and the author.

NEXT MEETING DATE: 11/07/90

Send all contributions by the
3rd Wednesday of the month to:

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Editor
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5052 N. 91st Street
Milwaukee WI 53225-4129

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The Limits Of Computer Intelligence II
by Dr. Lloyd Dreger

Editors note: This is the talk Dr. Dreger gave at the '90 Expo. Also because of the length of the article it will run in the next four issues of SMUG Bytes. This is the 2nd part.


The Chinese room. Searle puts a human who only understands English and doesn't understand Chinese into a room with two baskets of Chinese symbols (data base) and an English rule book (algorithm). Through the mail slot come strings of Chinese symbols (input data). Using the rule book the human sends back a new string of symbols (output). A Chinese expert applies the Turing rule to the output. Can the human ever learn Chinese? Notice that it is "strings of symbols" and not questions. An improvement would be to use a nonsense symbol room--the human has one big big hint the computer doesn't have. Even if one didn't know Chinese it would be difficult not to

recognize the symbols as Chinese or at least Oriental and have the clue that one is dealing with a language. In the nonsense symbol room the human first has to decide if he is playing chess, doing math or talking a language before he can come to grips with trying to learn the meaning of a symbol. The human in the Chinese room just might eventually learn the meanings of at least some of the symbols. In the nonsense symbol room the probability is much lower that the human will ever understand. The human always is asking the question of "What am I doing?" and may just make a lucky guess. Computers never question what they are doing--no inquisitiveness.

While we are at it, we dismiss Churchland's counter argument of the light room as suffering from a fatal omission which any good scientist should be able to spot. Continued

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PRESIDENTS PROGRAM

Well it seems three of our members are now proud? owners of IBM clones. I hope they don't forget their roots. I must say I am one of those with an IBM clone. The three of us are using the computers in conjunction with our work and still use the Sinclair. In fact this is written on the QL.

Up coming events: Sat. Nov 10. Serb Hall. 51st & Oklahoma \$4 at the door. Sat Jan. 12. Waukesha County Expo. \$3 at the door.

GIGO

Or In Otherwords The Meeting

Our Treasurer reported on the shape of SMUG. It appears we are well and will remain so for a while. Dick also is setting up modem classes for the November meeting. Show up and learn or help teach. Our Secretary is still taking orders for the SMUG cup. See Bud if you have not ordered yours. We seem to be having fewer members attending the meetings. Is it something I said? Well show up at the November meeting. If you have an idea that you wish to share we'll listen.

AI Continued

There are no limits set on the required frequencies needed to achieve light from an oscillating electro magnetic field. With the necessary limits in place one can't reach the conclusions Churchland does.

Proposition 3. Syntax can not by itself create semantics. If this statement is true computers won't ever think, comprehend or understand. The advocates of AI strongly disagree with this statement. Let's look at the evidence.

We can feed the whole unabridged dictionary into the computer. It can spout back the definition of a word to us but it is merely giving us those meaningless symbols we gave it. The computer does not understand or comprehend.

Can syntax create meaning? Bell Labs has been working on a voice typewriter for the physically impaired. One problem with the English language is homonyms--words pronounced the same but spelled differently. One example

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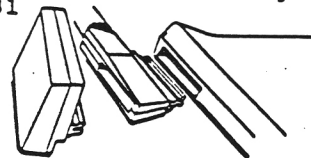
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is two, to and too. The Bell Labs scientist have found that they can get it right 97% of the time if they look at the next 7 words. Problems arise with short statements. 3 to 5 can be a score, 3-2-5, 3, 4 and 5 or 3:00 to 5:00 (time). The human mind sometimes has trouble as well in deciding in just 3 words but if the article is talking about a particular subject always gets it right as it looks quite a ways backward and forward. But note, only in the case of 3-2-5 is the word spelled differently. The computer doesn't need any comprehension of the meaning of the statement to get the right spelling. Take a look at 3:00 to 5:00. Numbers can have different meanings in content although writing 3 to 5 is acceptable grammatically. Thus getting the spelling right & knowing

the meaning are two different things. That 97% drops to 0% for cognition. Word meanings are strongly dependent upon context.

How do computers do on translation from one language to another? They do word for word translations while watching for idiomatic expressions and then do syntactical rearrangement of word orders. Translation into English, the language with more words and meanings of words in it than any other living or dead language, fail miserably as an erudite translation and sometimes even fail to give the correct meanings. Translations of poetry is even worse with all its similes, metaphors etc. to contend with. The language translated into usually has no exact counterpart for a foreign simile or metaphor while word to word translation are inadequate.

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The words in a thesarus are similiar but not quite identical in meanings and even humans have to be careful in which word they use as a substitute Ask the translators at the United Nations how hard their job is.

Some limits of algorithms: Penrose points out that it has been rigorously proven that:

1. There will never be a universal algorithm to solve any and all mathematical problems.

2. Not all mathematical problems are solvable by algorithms.

3. Godel's Theorem: Any precise system of axioms and rules always contains some truths or statements that are not provable or disprovable using only the system axioms, rules & theorems derived within the system.

If these things are true of mathematics, the "Queen of the

Sciences", where everything is logic, calculations and more or less black or white, then its even more true in any other field where things are not as logical, calculable or black and white. Computer algorithms and computers are a branch of mathematics. This implies that there are defina^te limits to what can be done on a computer unless somehow a computer and its algorithm transcend mathematics. That is not possible with a digital computer as everything in a digital computer is done mathematically.

Are minds strictly computers or do they contain or do something more? Specifically, something that can't be done with an algorithm. Some things that seem quite far removed from mathematics are amenable to algorithmic solutions. It is the hope of AI that words can be processed into cognition with a complex enough algorithm. To define cognition: knowledge in its broadest sense

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including comprehension, perception, memory, judgement, understanding, implications, etc.; total awareness. Penrose uses the word conscious which not only includes cognition but also the ability to think and other attributes such as inquisitiveness, aesthetics initiative, intuition, inspiration, aesthetics, insight, attentiveness, etc. Whether or not all these are necessary for thinking is debatable.

Don't think that man is unique in the ability to comprehend, other animals also have at least some. A recent experiment has taught a primate how to sign language since apes lack the

vocal chords necessary for mimicked human speech. Not only can the ape sign intelligently but it taught the signs to its offspring. When the offspring died, the mother put together a series of signs that it had never been taught that said it was sad. It did not say it was sick which also was a sign it knew. Many species of animals talk to each other in a language all their own be it very rudimentary compared to human standards. Cognition is a biological phenomenon of brains. This should not imply that all brains comprehend.

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ATTENTION — NEW POLICY — ATTENTION

Starting with the November issue SMUG Bytes will become bimonthly. In other words 2 months combined.

There are two reasons for this and they are:

1. Lack of material and news. With the Sinclair community shrinking and less and less hardware, software, gossip & general information appearing on the horizon I just can't fill the pages necessary to print a monthly magazine.

2. I am getting tired of meeting the monthly deadline. I have been doing it since September of 84 and it isn't the fun it used to be. Quite a few people have written articles to help fill the pages in the past, but they have been dropping off. One other trend I have noted is that most of the other news letters have gone to this format or even quarterly. So to keep us up with the trend I am dropping back & punting in hopes of still putting out a good newsletter. If anyone is upset with the new format write me with your reasons. I can change back.

AND YOU THOUGHT YOU HAD A BAD DAY.

A letter written to explain the details shown in an accident report.

Dear Sirs:

I am writing in response to your request for more information. In block 3 of the accident report form I put "trying to do the job alone", as the cause of the accident. You said I must explain more fully. I trust that the following details will be sufficient.

I'm a sprinkler fitter by trade. On the day of the accident, I was working alone on the roof of a new six story building. When I completed my work, I discovered that I had about 500 lbs of material left over. Rather than carry the materials down by hand, I decided to lower them in a barrel by using a pulley which fortunately was attached, outside the building, at level 6.

Securing the rope at ground level, I went up to the roof, swung the barrel out and loaded the material into it. Then, I went back to the ground and untied the rope, holding it tightly to insure a slow descent of the 500 lbs. of material. You will note in block 11 of the accident report that I weigh 135 lbs.

Due to my surprise of being jerked off the ground so suddenly, I lost presence of mind and forgot to let go of the rope. Needless to say, I went at a rather rapid rate up the side of the building.

In the vicinity of the third floor, I met the barrel coming down. This

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explains the fractured skull & broken collarbone.

Slowed only slightly, I continued my rapid ascent, not stopping until the fingers of my right hand were two knuckles deep into the pulley.

Fortunately, by now I regained my presence of mind and was able to hold tightly to the rope in spite of my pain.

At about the same time, however, the barrel of materials hit the ground and the bottom fell out of the barrel. Devoid of the weight the barrel now weighed approximately 50 pounds.

I refer you to my weight in block 11. As you might imagine, I began a rapid descent along the side of the building.

In the vicinity of the third floor, I met the barrel coming up. This caused two fractured ankles and the lacerations of my legs and lower body.

The encounter with the barrel slowed me enough to lessen my injuries when I fell onto the pile of materials and, fortunately, only three vertebrae were cracked.

I am sorry to report, however, that as I lay there on the materials—in pain, unable to stand and watching the empty barrel six stories above me, I again lost my presence of mind—

I LET GO OF THE ROPE.

The Sinclair Milwaukee Users Group (SMUG)

We are a not-for-profit group devoted to serving the interests of those who own, use, and/or are interested in the Timex/Sinclair family of computers.

Editor and contact person is:
Bill Heberlein (414) 527 2191.

SMUG maintains a gratis exchange of newsletters with approximately 30 Users Groups across the U.S. and Canada. Clubs not sending newsletters for more than 6 months are removed from our mailing list.

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6:00 Set Up
6:30 MODEM training using the QL
7:30 Business Meeting
8:30 Who Can Show What They'r Doing
9:00 MODEM continued
10:30 Clean Up